
III. *The Variation of the Magnetical Compass, observed by Capt. Rogers, Commander of the Ship Duke, in his Passage from Cape St. Lucar in Calefornia to the Isle of Guam or Guana, one of the Ladrones, with some Remarks thereon. Communicated by the same.*

HAVING lately had the Opportunity of perusing Capt. Woods Rogers's original Journal, who in 1709-10, in eight Weeks time traversed the great *South-Sea*, or *Pacifick Ocean*, I was highly pleased to find the Care he had taken to set down the Variations of the *Magnetical Compass* in his Passage from the South Cape of *Calefornia* to the Island of *Guana*, being about seven Hours or 105 Degrees of Longitude. This might have been long since expected from Capt. *Dampier*, who had three times made the *Tour of the World*, and thrice gone this very same Track.

It were to be wisht that the *French*, who have had frequent Opportunities to do it, would bestow upon us an account of the Variations they have lately found in their Voyages from *Peru* and *Chili* to *China*; and that the *Spaniards* would tell us how the Needle varies at this time in the North Part of that great Sea, through which they return from the *Manilla's* to *New Spain*. With these helps, having three Points in each Curve, we might be enabled

abled with a tolerable certainty to compleat the System of the Magnetick Variations, which I was forced to leave unfinished, as to this part of the Ocean, in my General Chart thereof, for want of the Observations requisite.

In the mean time, please to take the following Account extracted from Capt. Rogers's Journal; wherein the first Column gives the correct Latitude of the Place; the second, the Longitude West from London, as estimated by Reckoning; and the third the Variation, which in this whole Track is *Easterly*.

Variations observed in the Great South-Sea, from the South Cape of Calefornia to the Island of Guana or Guam, one of the Ladrones.

| January 1709-10. | Lat. correct. every Day | Long. West from London | Variation Easterly. |
|---------------------|----------------------------|---------------------------|------------------------|
| 12 | 22 16 | 114 09 | 03 00 |
| | 21 18 | 114 42 | 02 50 |
| | 20 24 | 115 15 | 02 50 |
| | 19 25 | 115 45 | 02 50 |
| | 18 56 | 116 24 | 02 45 |
| | 18 00 | 117 06 | 02 45 |
| 15 | 17 11 | 117 30 | 02 15 |
| | 16 32 | 118 05 | 02 00 |
| | 15 44 | 118 54 | 01 50 |
| | 15 00 | 120 15 | 01 30 |
| | 14 49 | 122 05 | 01 10 |
| | 14 36 | 124 25 | 00 50 |
| 20 | 14 24 | 126 45 | 00 40 |
| | 14 14 | 129 05 | 00 45 |
| | 13 50 | 131 23 | 00 50 |
| | 13 29 | 132 58 | 01 00 |
| | 13 29 | 134 41 | 01 10 |
| | 13 22 | 136 48 | 01 15 |
| 25 | 13 27 | 139 21 | 01 25 |
| | 13 32 | 142 07 | 01 30 |
| | 13 32 | 144 37 | 01 40 |
| | 13 36 | 147 32 | 01 50 |
| | | | |
| | | | |
| Feb. 1 | | | |
| | | | |

Variations observed in the SOUTH-SEA.

| 1709-10. | Lat. | North correct. daily | Long. | West from London. | Variation Easterly. |
|----------|------|-------------------------|-------|----------------------|------------------------|
| Feb. 3. | 13 | 26 | 150 | 18 | 02 00 |
| | 13 | 26 | 153 | 02 | 02 10 |
| 5 | 13 | 26 | 155 | 19 | 02 25 |
| | 13 | 26 | 157 | 43 | 02 30 |
| | 13 | 25 | 160 | 31 | 02 50 |
| | 13 | 41 | 163 | 00 | 03 00 |
| | 13 | 41 | 165 | 18 | 03 20 |
| 10 | 13 | 44 | 167 | 26 | 03 30 |
| | 13 | 36 | 169 | 56 | 03 45 |
| | 13 | 33 | 172 | 27 | 04 00 |
| | 13 | 36 | 175 | 00 | 04 30 |
| | 13 | 32 | 177 | 21 | 05 20 |
| 15 | 13 | 40 | 179 | 28 | 06 30 |
| | 13 | 47 | 181 | 24 | 07 00 |
| | 13 | 54 | 183 | 22 | 07 30 |
| | 13 | 52 | 185 | 37 | 09 00 |
| | 13 | 40 | 187 | 42 | 10 15 |
| 20 | 13 | 28 | 189 | 49 | 11 00 |
| | 13 | 21 | 191 | 30 | 11 30 |
| | 13 | 12 | 193 | 25 | 12 00 |
| | 13 | 07 | 194 | 37 | 11 50 |
| | 13 | 10 | 195 | 51 | 11 00 |
| 25 | 13 | 03 | 197 | 51 | 10 00 |
| | 13 | 00 | 199 | 03 | 09 50 |
| | 12 | 57 | 200 | 16 | 09 30 |
| | 12 | 54 | 202 | 20 | 09 00 |
| March 1 | 12 | 58 | 204 | 12 | 08 40 |
| | 13 | 04 | 206 | 06 | 08 20 |
| | 13 | 05 | 207 | 33 | 08 00 |
| | 13 | 05 | 209 | 04 | 07 50 |
| 5 | 13 | 02 | 211 | 54 | 07 30 |
| | 13 | 07 | 212 | 42 | 07 10 |
| | 13 | 07 | 214 | 07 | 07 00 |
| | 13 | 03 | 215 | 28 | 06 50 |
| | 13 | 08 | 217 | 11 | 06 30 |
| 10 | 13 | 16 | 218 | 27 | 05 40 |

Island of Guana in Sight.

By

By this it appears, that at about 250 or 300 Leagues West from the South-head of *Calefornia*, the *East Variation* diminishes to about $\frac{1}{2}$ of a degree; That for 1300 Leagues from thence, the same *Easterly Variation* gradually encreases to about 12 degrees, where it becomes greatest. And that at the Isle of *Guam*, five hundred Leagues still more *Westerly*, it is again decreased to 5 degrees 40 minutes.

As far as this single Instance can direct us, I am inclinable to think, that in all that space of Sea which lies to the Northwards of our Track, between *Japon* and *Calefornia*, there reigns an *Easterly Variation*, which is still greater and greater as the North Latitude encreases. But that to the Southward of our Track, and especially to the Southward of the Equinoctial, a *Westerly Variation* arises, of no great extent or quantity, but which is greatest about 1000 Leagues West from the Coasts of *Peru* and *Chili*, about the same Meridians where Capt. *Rogers* found the *East Variation* smallest. This is agreeable to the *Theory of the Variation* I laid down in No. 148. of these *Transactions*, about 40 Years since; and I then expressly mentioned, in my seventh Remark on the Observations there cited, that there was undoubtedly such a Tract of *West Variation* in the Southern Parts of the *South-Sea*, it being the necessary Consequence of the Site of the four Magnetical Poles there supposed, though at that time I wanted Experiments to prove it.